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THE RELATIONSHIP OF SEPTIC SORE THROAT TO INFECTED MILK*

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The epidemic of streptococcus sore throat which visited Chicago during the winters of 1911 and 1912 was definitely traced to one dairy.[1] This dairy had its largest collecting and pasteurizing plant in the town of Batavia, and the milk was delivered to this plant from about eighty-five dairy farms in the adjacent country. On a number of these farms were found not only cases of mastitis in the cows, but cases of sore throat among the milkers, which were of the same type as the epidemic cases in Chicago using milk from this dairy.

In the published report of the Chicago epidemic, reference was made to the coincident outbreak in Batavia, but the investigation of the latter had not been completed. This final report reveals certain unusual conditions prevailing in Batavia, that seemed to have greatly increased the spread of the disease in that town.

The small epidemic in Oak Park herein described, occurred during the same winter as those in Chicago and Batavia, but had an independent origin. The report is of interest because the investigation was started from the infected cow and followed to the milk consumers, instead of being started in the usual way from the consumer and traced to the cow.[2]

THE RELATION OF THE EPIDEMIC IN BATAVIA TO THE MILK-SUPPLY

The milk brought in from the country to the pasteurizing plant of Dairy X at Batavia, was sent to the town of Batavia as well as to Chicago. A study of the pasteurizing records convinced us that during the months under consideration (December, 1911, to March, 1912), the apparatus was inefficient on many days. An extensive canvas in four different sections of Chicago showed that the sore throat morbidity among users of milk from this dairy was from seven to fourteen times as great as among users of milk from other dairies. It seemed

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[1] *Jour. Am. Med. Assn.*, 1912, 58, p. 1848.

[2] *Ibid.*, p. 1852.

important, therefore, to determine whether users of this milk in Batavia also exhibited a relatively high morbidity of sore throat.

An investigation was made of the prevalence of sore throat and of the milk-supply in 494 households. It was found there were 218 cases of sore throat in 140 households using milk from Dairy X, or a ratio of 156 cases to 100 households supplied by this milk. This was even higher than the ratio obtained in Chicago, viz., 113 cases of sore throat to 100 households supplied.

But at this point the Batavia epidemic offered a decided contrast to the one in Chicago. In Chicago the customers of other dairies had a low morbidity, whereas in Batavia, sore throat was prevalent among the customers of the 11 other dairies, altho in no case did it approach the high morbidity of Dairy X. The ratios in the 11 dairy routes varied from 3 cases of sore throat to 100 households to 64 cases to 100 households

This unusual prevalence of sore throat among the consumers of milk of other dairies was not explained by examination of the cows and milkers.

Mastitis was reported on four farms. Individual cases of sore throat were found on two farms. On one farm only, Dairy G, was the combination of sore throat and mastitis revealed and this farm was one of the smallest, supplying only fourteen households. The great majority of cases of sore throat used milk from dairies presenting no suspicious conditions on the farms.

A discovery by the dairy inspector of the Health Department threw a new light on the situation. He frequently noted at the dairy farms other dairies' bottles which were taken in exchange at customers' houses. These bottles were washed merely in cold water. Since none of these eleven dairies pasteurized their milk, an infected bottle would thus be capable of contaminating pure milk.

Chart 1 shows that Dairies A-G, inclusive, delivered milk in bottles, and on every one of these farms excepting Dairy G, bottles belonging to Dairy X were found.

Dairies H, K, L and M delivered milk in cans or pails and consequently their milk was not exposed to bottle contamination. The ratio of cases of sore throat among the can users was 17 cases to 100 households, compared with 37 to 100 among the bottle users, and 156 to 100 among the consumers of Dairy X milk. To express the matter differently, over 77 per cent. of all cases of sore throat among custom-

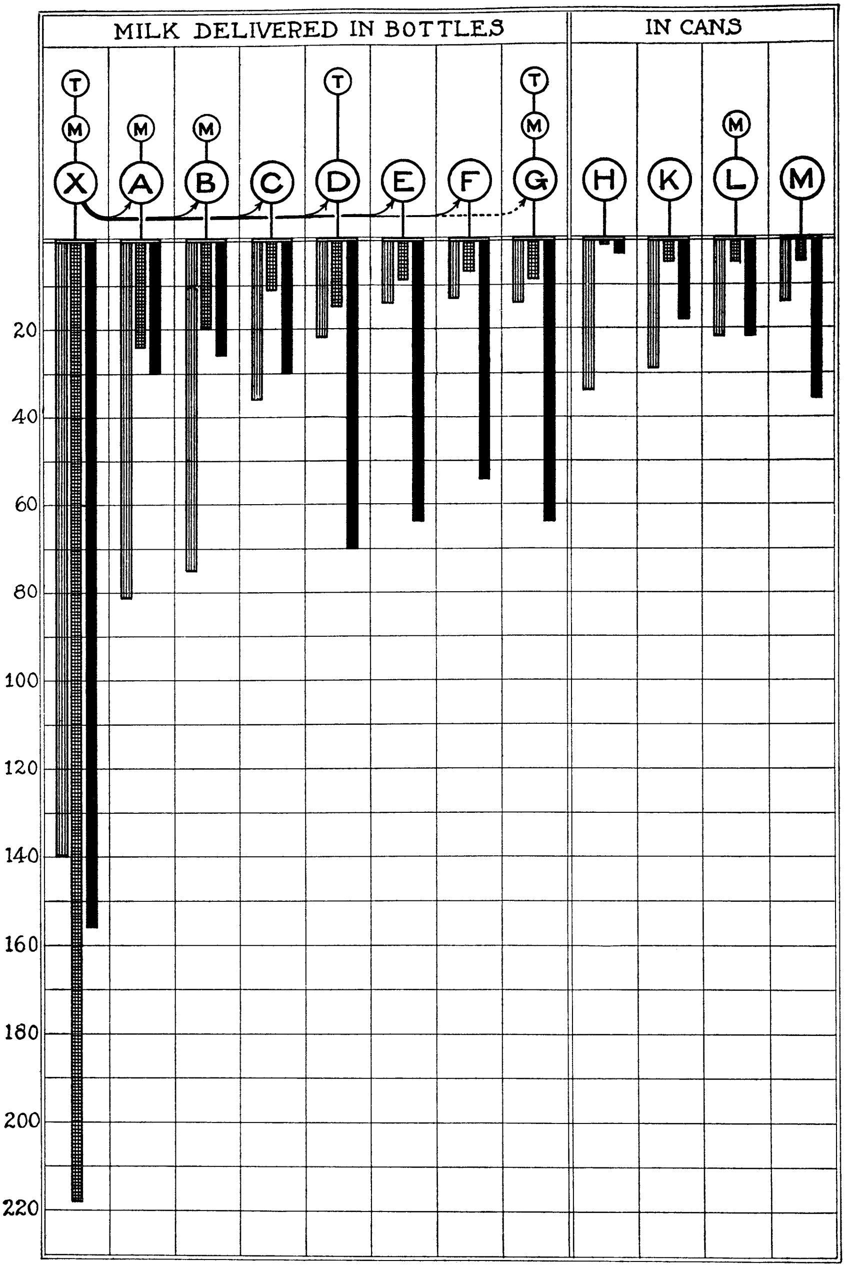

Chart 1.—Illustrating the proportion of sore throat cases credited to 12 dairies of Batavia. The letters T and M in small circles = sore throat and mastitis respectively on the farm; the column of vertical lines = the number of households supplied; the barred column = the number of cases of sore throat; the black column = the number of cases per hundred households. Dairies A—F are shown by arrows to be exposed to contamination by exchange of bottles with Dairy X, which is known to be infected.

ers of the eleven dairies A-M were exposed to the contamination of bottles from Dairy X.

This evidence is submitted not as conclusive, but as highly indicative of a wide-spread milk contamination though a free exchange of bottles with a dairy whose milk was infected.

THE EPIDEMIC IN OAK PARK TRACED FROM THE FARM TO THE CONSUMERS

As stated before, we have looked on the combination of mastitis in cows and sore throat in the milkers on the same farm as strong circumstantial evidence of infected milk. We thereupon searched for a farm, where such a combination of conditions was present, and found it.

The farm was stocked with fifteen cows, three of which were affected with mastitis during January and February, 1912. At the time of our visit one cow still had a caked bag and the milk was being saved for consumption. In the household were twelve persons, including employees, nearly all of whom used milk or cream. Within the above mentioned period nine of these individuals were ill with sore throat.

The milk was sold to Dairy A (Chart 2) in Oak Park. Two other farms supplied milk to Dairy A, but on neither of these farms (Farms 2 and 3) were any cases of sore throat or mastitis found.

Dairy A delivered the mixed milk from these three farms in bottles without pasteurizing. A careful canvas of the 140 customers of Dairy A in Oak Park showed 40 cases of sore throat, or 28 cases to 100 households supplied.

To establish a basis of comparison a list of customers was obtained in the same neighborhood from Dairy B, which employs the holding method of pasteurization. In a total of 84 households supplied by Dairy B, five cases of sore throat were found, or less than six cases per 100 households.

There were four and one-half times as many cases of sort throat, proportionately, among the customers of Dairy A as among those of Dairy B.

We believe that the excessive morbidity among the users of Dairy A milk was probably due to the consumption of milk which was contaminated on Farm 1.

Is it not reasonable to suppose that similar small epidemics are of frequent occurrence?

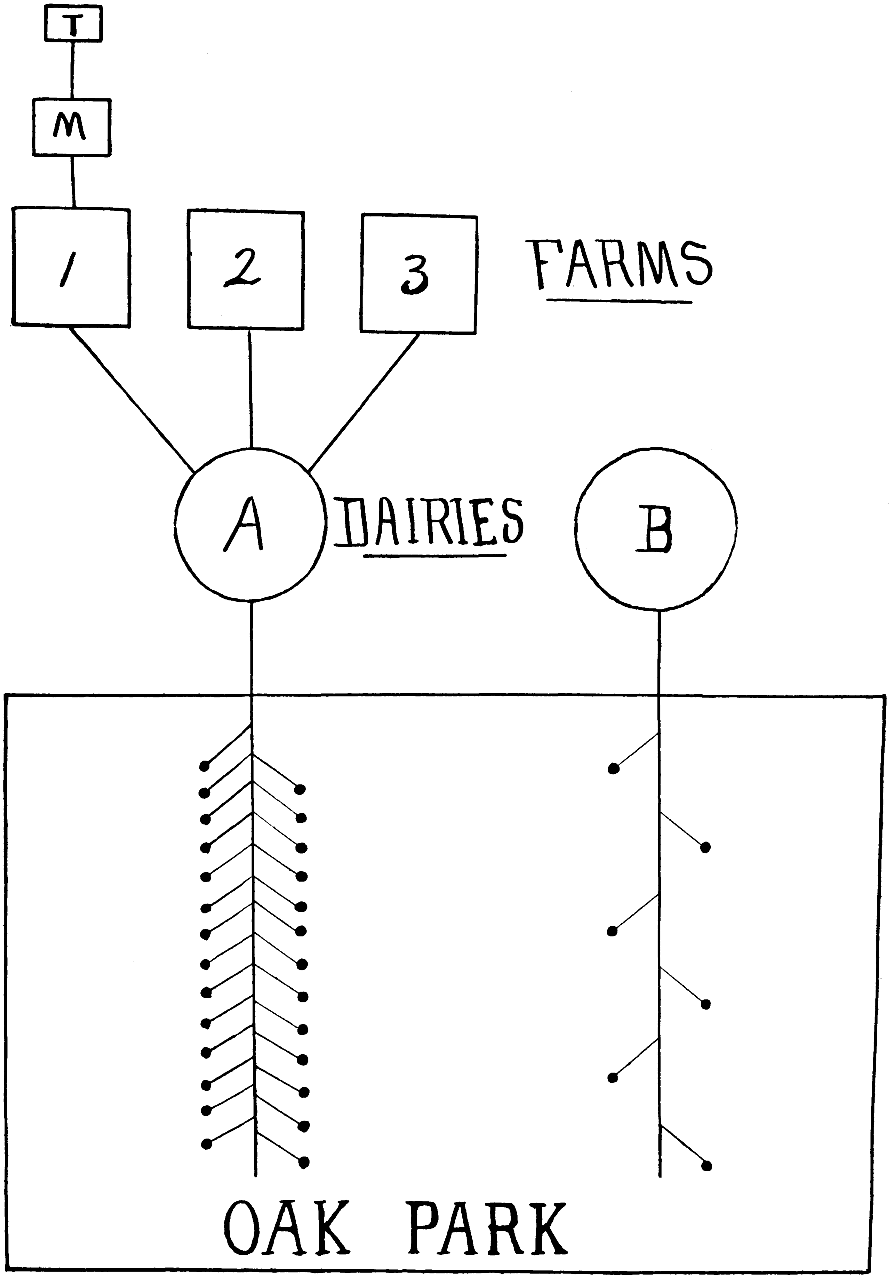

Chart 2.—Tracing the milk from a suspected farm, Farm 1, where mastitis (*M*) is prevalent in the cows and sore throat (*T*) in the milkers to a dairy company in Oak Park (A), which does not pasteurize. Compare the number of sore throat cases per hundred households (*27*) occurring in this route to the small number (*6*) occurring in another dairy route in the same neighborhood.